Greenforest Incorporated
Consulting Arborist

August 19, 2015

Greg Nelson, William E Buchan, Inc.
2630 116th Ave NE, #100
Bellevue, WA 98004

RE: Arborist Report, 12702 72nd Ave NE 98034. TPN 4055700825

Dear Mr. Nelson:

You contracted my services as a consulting arborist. My assignment is to inspect the significant trees at the above referenced site. The purpose of this report is to establish the condition of the significant trees to satisfy City of Kirkland permit submittal requirements.

I received a tree survey from Blueline dated 4/15/15. I visited the site 4/16/15 and visually inspected the trees indicated on the survey, which are the subject of this report.

The site is 6.35 acres in size. It is relatively flat, except along the east and south boundaries where the elevation drops sharply. The flat portion currently contains two single-family residences, a barn, swimming pool, and associated outbuildings. The survey I received includes only the trees on the flat portion of the site. The significant trees growing on the steep slopes were not surveyed, but are included in this report.

The subject trees include both native and ornamental species. The landscaping around the main house is mature and well maintained, and includes trees, shrubs, groundcovers and turf grass. In addition to native species, the landscaping includes a wide variety of ornamental trees of both deciduous and evergreen species.

All the shrubs and groundcovers are ornamental or naturalized species and are part of a designed landscape installation. Many shrub beds are now over-mature or shaded and areas once occupied by groundcovers are now bare soil. Shrubs species on this site include cultivars of rhododendron, azalea, juniper, heather and blueberry, as well as Sarcococca, salal, Mock orange and naturalized Western filbert. Groundcovers include Pachysandra, Creeping raspberry, English ivy, and both turf and pasture grass.

A smaller 'rental house' and a barn are north of the primary house. The landscape along this north portion of the site is minimal, contains copious weeds and invasive brambles, and a large open area of pasture grass.

The trees on the sloped areas to the east and south are nearly all native species. And both native and invasive shrubs and groundcovers grow on these slopes including western filbert, English holly and ivy, Indian plum and Western swordfern.

I located 18 trees of significant size not shown on the original survey. They are included in this report as trees numbered A-R in the following inventory.

TREE INSPECTION – Tree Health, Condition and Viability
I visually inspected each surveyed tree from the ground, and rated both tree health and structure. A tree's structure is distinct from its health. This inspection identifies what is visible with both. Structure is the way the tree is put together or constructed, and identifying obvious defects can be helpful in determining if a tree is predisposed to failure. Tree health assesses disease, insect infestation and old age.

The trees on the slope, though not surveyed, are included in this report. I walked along the slope and tallied the healthy viable significant trees. I recorded the species and DBH of all the healthy trees 6" DBH and greater. These trees are used in the tree density calculations below, and are reported individually in a separate attachment.

No invasive procedures were performed on any trees. The results of this inspection are based on what was visible at the time of the inspection.

The inventory below summarizes my inspection results for the surveyed trees, and provides the following information for each tree:

Tree number as shown on tag in the field.

Tree Species Common name.

DBH Stem diameter in inches measured 4.5 feet from the ground.

Dripline Average branch extension from the trunk as radius in feet.

Structure and Health rating ('1' indicates no visible health-related problems or structural defects, '2' indicates minor visible problems or defects that may require attention if the

tree is retained, and '3' indicates significant visible problems or defects and tree removal is recommended.

Visible defects Obvious structural defects or diseases visible at time of inspection, which includes:

Asymmetric canopy– the tree has an asymmetric canopy from space and light competition from adjacent trees.
Deadwood – Large and/or multiple dead branches throughout canopy.
Decline -
Foliar disease - Foliage is diseased with manageable fungus.
Girdling roots -
Insect Injury – active insect injury affecting tree health.
Ivy - Dense ivy prevents a thorough inspection, and other defects may be present.
LCR – Live crown ratio: the ratio of the tree height to the portion of the tree with foliage-bearing branches. Stand-alone trees with a LCR of 30 and lower are at increased risk of failure.
Multiple leaders - the tree has multiple stem attachments, which may lead to tree failure and require maintenance or monitoring over time.
Thinning Canopy – low foliage density indicated infection/declining health.
Suppressed – tree crowded by larger adjacent trees, with defective structure and/or low vigor. Retain tree only as a grove tree, not stand-alone.
Trunk decay - Wood decay is visible in the trunk.

Viability a determination by the arborist whether the tree is viable for retention.

Table No. 1. Tree Inventory

Tree No.	DBH	Species	Dripline	Health	Structure	Viable Tree?	Visible Defects/Notes
1000	10"	Plum	8'	3	3	No	Diseased, mal-pruned
1001	10	Apple	10	2	2	Yes	Diseased
1002	(10) 6-12	Mt. Ash	16	1	2	Yes	Asymmetric canopy, multiple leaders
1003	18	Western red-cedar	12	3	2	No	Decline, girdling roots. Flagged 5403
1004	8	Leyland cypress	6	1	1	Yes	
1005	8	Leyland cypress	7	1	1	Yes	

Tree No.	DBH	Species	Dripline	Health	Structure	Viable Tree?	Visible Defects/Notes
1006	9	Leyland cypress	7	1	1	Yes	
1007	7	Leyland cypress	6	1	1	Yes	
1009	19	European birch	16	1	1	Yes	
1010	9	Mt. hemlock	6	1	2	Yes	Low LCR
1011	8,12	Thread cypress	8	1	1	Yes	
1012	(4) 10	Thread cypress	8	1	1	Yes	
1013	12	Apple	10	1	1	Yes	
1015	6	Leyland cypress	6	1	1	Yes	
5223	27	Apple	20	1	1	Yes	
5224	24	Apple	22	1	1	Yes	
5283	20,26	Deodar cedar	25	1	2	Yes	Double leader, asymmetric canopy
5284	23	Blue spruce	9	2	2	Yes	Aphid insect injury, Low LCR
5285	40	Douglas-fir	20	1	1	Yes	
5286	68	Giant sequoia	25	1	1	Yes	
5287	51	Western red-cedar	24	1	1	Yes	
5288	40	Douglas-fir	22	1	1	Yes	
5312	25	Douglas-fir	18	1	2	Yes	Asymmetric canopy
5313	61	Douglas-fir	25	1	1	Yes	
5314	46	Pacific madrone	20	2	2	Yes	Diseased, deadwood
5315	15,17,20	Pacific madrone	16	2	3	No	Diseased, trunk decay, deadwood
5316	45	Douglas-fir	22	1	1	Yes	
5317	49	Pacific madrone	30	2	2	Yes	Diseased, deadwood
5318	75	Giant sequoia	25	1	1	Yes	
5437	10	Blue spruce	7	2	1	Yes	Thin canopy
5456	24	Western red-cedar	16	1	2	Yes	Double leader
5470	31	Douglas-fir	18	1	1	Yes	
5471	24	Douglas-fir	16	1	1	Yes	
5473	12	English holly	8	3	1	No	Foliar disease
5479	12	Norway spruce	9	1	1	Yes	
5486	15	Douglas-fir	10	1	1	Yes	
5487	12	Pink dogwood	14	2	1	Yes	
5488	29	Deodar cedar	22	1	1	Yes	

Tree No.	DBH	Species	Dripline	Health	Structure	Viable Tree?	Visible Defects/Notes
5491	33	Western red-cedar	20	1	1	Yes	
5492	21	Incense cedar	10	1	1	Yes	
5493	16,12,17,22	Incense cedar	16	1	2	Yes	Multiple leaders
5526	45	Douglas-fir	18	1	1	Yes	
5530	36	Douglas-fir	16	1	1	Yes	
5536	15	Hinoki cypress	8	1	1	Yes	
5537	12,18,18,18	Katsura	25	1	2	Yes	Multiple leaders
5545	25	Red maple	22	1	1	Yes	
5551	17,23,27	Incense cedar	16	1	2	Yes	Multiple leaders
5552	28	Douglas-fir	20	1	1	Yes	
5553	37	Douglas-fir	20	1	1	Yes	
5557	34	Douglas-fir	18	1	1	Yes	
5570	17	Pacific madrone	6	3	3	No	Ivy covered, nearly dead
5573	17	Western hemlock	14	1	1	Yes	
5574	19	Douglas-fir	16	1	1	Yes	
5575	38	Western red-cedar	20	1	1	Yes	
5579	40	Douglas-fir	25	1	1	Yes	
5580	15	Chamaecyparis	12	2	1	Yes	Thin canopy
5581	11	Tupelo	9	1	1	Yes	
A	9	Pear	8	3	2	No	Diseased
B	8	Grand fir	5	1	1	Yes	
C	9	Alaska cedar	4	1	1	Yes	
D	10	Scots pine	8	2	1	Yes	Low LCR
E	11	Scots pine	8	2	1	Yes	Low LCR
F	10,12	Portugal laurel	14	2	1	Yes	Suppressed
G	10,13	Portugal laurel	14	2	1	Yes	Suppressed
H	10	Western red-cedar	6	2	1	Yes	Suppressed
I	6	Chamaecyparis	4	3	2	No	Decline
J	8	Hinoki cypress	4	2	1	Yes	Asymmetric canopy
K	10	Hollywood juniper	6	2	2	Yes	Asymmetric canopy
L	11	Hollywood juniper	6	2	2	Yes	Asymmetric canopy
M	7	Kousa dogwood	6	1	1	Yes	
N	10	Pacific dogwood	4	2	3	No	Trunk decay
O	8	European birch	5	1	3	No	Lean in trunk

Tree No.	DBH	Species	Dripline	Health	Structure	Viable Tree?	Visible Defects/Notes
P	9	Douglas-fir	6	1	2	Yes	Suppressed
Q	8	Pacific dogwood	6	1	1	Yes	
R	8	Spruce	4	3	1	No	Decline

RETAINED & IMPACTED TREES

31 surveyed trees are to be preserved and protected on the developed portion of the site. They are shown on the attached plan and are listed in the table below. These trees are divided into two groups: *Retained* and *Impacted*. Retained trees are protected by City code and their retention is mandatory. Impacted trees are significant trees to be preserved and protected during construction, though proposed disturbances near their root zones that may require removal.

In addition to the retained trees listed below, all the viable significant trees growing on the slopes will be retained.

Table No. 2. Retained & Impacted Trees

Impacted or Retained	Tree No.	DBH	Species
Impacted	5284	23"	Blue spruce
Impacted	5285	40	Douglas-fir
Impacted	5312	25	Douglas-fir
Impacted	5313	61	Douglas-fir
Retained	5315	15,17,20	Pacific madrone
Retained	5316	45	Douglas-fir
Retained	5456	24	Western red-cedar
Impacted	5470	31	Douglas-fir
Impacted	5471	24	Douglas-fir
Impacted	5473	12	English holly
Impacted	5488	29	Deodar cedar
Impacted	5491	33	Western red-cedar
Retained	5492	21	Incense cedar
Impacted	5493	16,12,17,22	Incense cedar
Retained	5536	15	Hinoki cypress
Impacted	5537	12,18,18,18	Katsura
Retained	5552	28	Douglas-fir

Impacted or Retained	Tree No.	DBH	Species
Retained	5553	37	Douglas-fir
Retained	5557	34	Douglas-fir
Retained	5570	17	Pacific madrone
Retained	5573	17	Western hemlock
Retained	5574	19	Douglas-fir
Retained	5575	38	Western red-cedar
Retained	5579	40	Douglas-fir
Impacted	F	10,12	Portugal laurel
Retained	G	10,13	Portugal laurel
Retained	H	10	Western red-cedar
Retained	I	6	Chamaecyparis
Retained	P	9	Douglas-fir
Retained	Q	8	Pacific dogwood
Retained	R	8	Spruce

LIMITS OF DISTURBANCE

Limits of Disturbance (LOD) are calculated for all the retained significant trees within the buildable portion of the project. They are listed below as radii in feet from the trunk for the side of the tree to be impacted by construction. They are determined using rootplate [1] and trunk diameter,[2,3] and ISA Best Management Practices.[4] These are the minimum distances from the trees for any soil disturbance, and represent the area to be protected during construction. These LOD are malleable and may be adjusted during the design and construction process. LOD for the trees growing on the slopes is the top of the slope.

The following table lists the limits of disturbance for certain surveyed retained trees for four cardinal sides of most trees. Where cells are blank, the tree is likely already protected within the LOD of an adjacent tree.

[1] Coder, Kim D. 2005. *Tree Biomechanics Series*. University of Georgia School of Forest Resources.
[2] Smiley, E. Thomas, Ph. D. *Assessing the Failure Potential of Tree Roots, Shade Tree Technical Report*. Bartlett Tree Research Laboratories.
[3] Fite, Kelby and E. Thomas Smiley. 2009. *Managing Trees During construction; Part Two*. Arborist News. ISA.
[4] Companion publication to the ANSI A300 Series, Part 5: Managing Trees During Construction. 2008. ISA.

Table No. 3. Limits of Disturbance

Tree No.	DBH	Species	DL	Limits of Disturbance			
				N	E	S	W
5284	23”	Blue spruce	9’	12’	12’	12’	12’
5285	40	Douglas-fir	20	DL	DL	DL	DL
5315	15,17,20	Pacific madrone	16	DL	DL	PL	5316
5316	45	Douglas-fir	22	DL	5315	PL	DL
5456	24	Western red-cedar	16			TOS	TOS
5470	31	Douglas-fir	18	DL		DL	14
5471	24	Douglas-fir	16	DL		DL	8
5473	12	English holly	8	DL		DL	4
5488	29	Deodar cedar	22	10	DL		DL
5491	33	Western red-cedar	20		DL		
5492	21	Incense cedar	10				
5493	16,12,17,22	Incense cedar	16		DL	DL	DL
5536	15	Hinoki cypress	8	DL	TOS	DL	DL
5537	12,18,18,18	Katsura	25	DL	TOS	DL	15
5552	28	Douglas-fir	20	DL	TOS	DL	DL
5553	37	Douglas-fir	20	DL	TOS	DL	DL
5557	34	Douglas-fir	18	DL	TOS	DL	DL
5570	17	Pacific madrone	6	15	15	TOS	TOS
5573	17	Western hemlock	14		DL		
5574	19	Douglas-fir	16		DL		
5575	38	Western red-cedar	20		DL		
5579	40	Douglas-fir	25	DL			
5580	15	Chamaecyparis	12				
5581	11	Tupelo	9	7	DL		
F	10,12	Portugal laurel	14		DL		
G	10,13	Portugal laurel	14				
H	10	Western red-cedar	6				
I	6	Chamaecyparis	4				
O	8	European birch	5	DL			DL
P	9	Douglas-fir	6				
Q	8	Pacific dogwood	6				
R	8	Spruce	4		6		

(PL=property line, DL = dripline, TOS= top of slope)

TREE PROTECTIVE FENCING
The attached grading plan shows the recommended contiguous limits of disturbance for groups of retained surveyed trees. These limits also represent the location of required tree protective fencing. Fencing shall be installed prior to any site clearing or demolition.

Minimum six (6) foot temporary chain-link fence shall be installed at the driplines of all retained trees or at the limits of disturbance as described above. Fencing shall completely encircle the retained trees. Install fence posts using pier block only. A City planner must approve any modifications to the fencing material and location.

No stockpiling of materials, vehicular or pedestrian traffic, material storage or use of equipment or machinery shall be allowed within the protective fencing. Fencing shall not be moved or removed unless approved by a City planner. Any work, activity or soil disturbance within the protection fencing, or critical root zone, shall be reviewed, approved and monitored by the project arborist.

Fencing signage as detailed (see attached) must be posted every fifteen (15) feet along the fencing.

Sincerely,

GreenForest, Inc.

By Favero Greenforest, M. S.

Favero Greenforest

Digitally signed by Favero Greenforest
DN: cn=Favero Greenforest, o, ou, email=greenforestinc@mindspring.com, c=US
Date: 2015.08.19 08:31:32 -07'00'

ISA Certified Arborist # PN -0143A
ASCA Registered Consulting Arborist® #379
ISA Tree Risk Assessment Qualified

Attachments:
1. Assumptions and Limiting Conditions
2. Talley of Significant Trees on Slope
3. Tree Protection Graphic
4. Grading Plan and Limits of Disturbance

Attachment No. 1 - Assumptions & Limiting Conditions

1) A field examination of the site was made 4/16/2015. My observations and conclusions are as of that date.

2) Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant/arborist can neither guarantee nor be responsible for the accuracy of information provided by others.

3) I am not a qualified land surveyor. Reasonable care was used to match the trees indicated on the sheets with those growing in the field.

4) Construction activities can significantly affect the condition of retained trees. All retained trees should be inspected after construction is completed, and then inspected regularly as part of routine maintenance.

5) Unless stated other wise: 1) information contained in this report covers only those trees that were examined and reflects the condition of those trees at the time of inspection; and 2) the inspection is limited to visual examination of the subject trees without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied that problems or deficiencies of the subject tree may not arise in the future.

6) All trees possess the risk of failure. Trees can fail at any time, with or without obvious defects, and with or without applied stress. A complete evaluation of the potential for this (a) tree to fail requires excavation and examination of the base of the subject tree. Permission of the current property owner must be obtained before this work can be undertaken and the hazard evaluation completed.

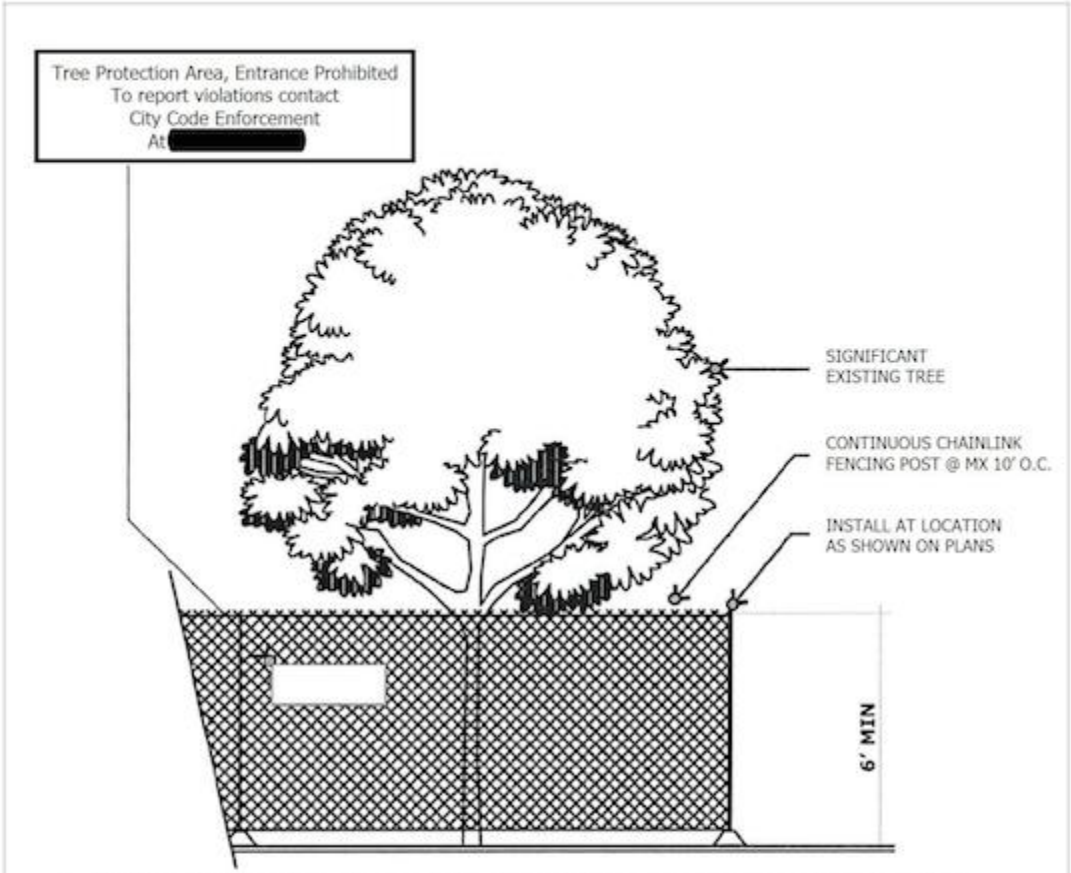
7) The consultant/appraiser shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made.

8) This report and any values/opinions expressed herein represent the opinion of the consultant/appraiser, and the consultant's/appraiser's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.

Attachment No. 2 – Talley of Significant Trees on Slope (With Available Tree Density Credit)

Tree Count	Alder	**Credit**	Cotton-wood	**Credit**	Madrone	**Credit**	Maple	**Credit**	Fir	**Credit**	Cedar	**Credit**	Hawthorn	**Credit**	
1	8"	**1**	16"	**4**	10"	**1**	6"	**1**	8"	**1**	8"	**1**	10"	**1**	
2	8	**1**			12	**2**	6	**1**	10	**1**	8	**1**			
3	8	**1**			16	**6**	10	**1**	10	**1**	10	**1**			
4	6	**1**			16	**6**	12	**2**	10	**1**	10	**1**			
5	6	**1**			18	**5**	16	**4**	14	**6**	10	**1**			
6	8	**1**			22	**7**	16	**4**	14	**6**	12	**2**			
7	8	**1**			28	**10**	18	**5**	16	**4**	12	**2**			
8	10	**1**					18	**5**	16	**4**	12	**2**			
9	10	**1**					18	**5**	16	**4**	12	**2**			
10	10	**1**					20	**6**	16	**4**	12	**2**			
11	12	**2**					20	**6**	16	**4**	12	**2**			
12	12	**2**					20	**6**	16	**4**	14	**3**			
13	12	**2**					22	**7**	18	**5**	14	**3**			
14	14	**6**					24	**8**	18	**5**	14	**3**			
15	14	**6**					28	**10**	18	**5**	16	**4**			
16	14	**6**					10,10	**1**	18	**5**	16	**4**			
17	14	**6**					18,20,22	**6**	20	**6**	24	**8**			
18	15	**6**					20,12	**4**	20	**6**	26	**9**			
19	15	**6**					20,20	**6**	20	**6**					
20	16	**4**					24,24,24	**8**	20	**6**					
21	16	**4**							20	**6**					
22	18	**5**							22	**7**					
23	18	**5**							22	**7**					
24	18	**5**							22	**7**					
25	18	**5**							24	**8**					
26	18	**5**							24	**8**					
27									24	**8**					
28									26	**9**					
29									28	**10**					
30									28	**10**					
31									30	**11**					
32									34	**13**					
	26		*1*		*7*		*20*		*32*		*18*		*1*		*105*
Credits		**85**		**4**		**37**		**96**		**188**		**51**		**1**	**462**

Attachment No. 3 – Tree Protection Graphic



1. MINIMUM SIX (6) FOOT HIGH TEMPORARY CHAINLINK FENCE SHALL BE PLACED AT THE CRITICAL ROOT ZONE OR DESIGNATED LIMIT OF DISTURBANCE OF THE TREE TO BE SAVED. FENCE SHALL COMPLETELY ENCIRCLE TREE(S). INSTALL FENCE POSTS USING PIER BLOCK ONLY. AVOID POST OR STAKES INTO MAJOR ROOTS. MODIFICATIONS TO FENCING MATERIAL AND LOCATION MUST BE APPROVED BY PLANNING OFFICIAL.

2. TREATMENT OF ROOTS EXPOSED DURING CONSTRUCTION: FOR ROOTS OVER ONE (1) INCH DIAMETER DAMAGED DURING CONSTRUCTION, MAKE A CLEAN STRAIGHT CUT TO REMOVE DAMAGED PORTION OF ROOT. ALL EXPOSED ROOTS SHALL BE TEMPORARILY COVERED WITH DAMP BURLAP TO PREVENT DRYING AND COVERED WITH SOIL AS SOON AS POSSIBLE.

3. NO STOCKPILING OF MATERIALS, VEHICULAR TRAFFIC, OR STORAGE OF EQUIPMENT OR MACHINERY SHALL BE ALLOWED WITHIN THE LIMIT OF THE FENCING. FENCING SHALL NOT BE MOVED OR REMOVED UNLESS APPROVED BY THE CITY PLANNING OFFICIAL. WORK WITHIN PROTECTION FENCE SHALL BE DONE MANUALLY UNDER THE SUPERVISION OF THE ON-SITE ARBORIST AND WITH PRIOR APPROVAL BY THE CITY PLANNING OFFICIAL.

4. FENCING SIGNAGE AS DETAILED ABOVE MUST BE POSTED EVERY FIFTEEN (15) FEET ALONG THE FENCE.

CITY OF KIRKLAND WASHINGTON

TREE PROTECTION FENCING DETAIL
(for public and private trees)

Attachment No. 4 – Grading Plan and Limits of Disturbance